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MASTER OF MILITARY STUDIES

TITLE:
**EXPANDING THE ROLE OF INTELLIGENCE
DURING COMBINED ARMS TRAINING**

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EXECUTIVE SUMMARY

Title: Expanding the Role of Intelligence during Combined Arms Training

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Thesis: The Combined Arms Exercise (CAX) routinely evolves to support the changing requirements of MAGTF training. The next evolution demands improvements in three areas: Increasing the Intelligence Battlefield Operating Systems (BOS) role in combined arms training, increasing the task organization of the TTECG, and teaching and executing more complete MAGTF combined arms training at CAX.

Discussion:

- a. The CAX evolved from exercises designated *Palm Tree*. *Palm Tree* evaluated artillery and aviation support of battalion-sized maneuver elements. *Palm Tree* featured an exercise that lasted thirteen days and had a Final Exercise (FINEX) during which forces maneuvered twenty kilometers.
- b. Following the implementation of the exercise, the CAX evolved, over time, in two distinct stages.
- c. The first major evolution of the CAX, during the mid-to-late 1980s and early 1990s, focused on the evaluated Marine units and commanders during an exercise that took approximately twenty days. The CAX included greatly expanded maneuver and fires and incorporated new technology in the form of the Combined Arms Staff Trainer (CAST). Commanders received a formal written evaluation of their unit's performance during CAX events.
- d. The second major evolution of the CAX occurred in the mid-1990s when the primary purpose of the exercise shifted from evaluation to education. The name of the CAX Control Group changed from Tactical Evaluation and Exercise Control Group to Tactical Training and Exercise Control Group. CAX now focuses on training the elements of the Marine Air Ground Task Force (MAGTF) as directed by Marine Corps Order 3500.11D. The twenty-four day CAX presently incorporates all Battlefield Operating Systems and covers approximately fifty kilometers per day during the maneuver phases of the FINEX.

- e. The CAX currently meets the Marine Corps' need to instruct and train Marines in the techniques and procedures required to integrate fires in support of a ground commander's scheme of maneuver. However, the continued relevance of the CAX requires a third evolutionary stage that enhances the MAGTF combined arms training through increased integration of intelligence assets. This requires an increase in TTECG staffing to mentor intelligence Marines and commanders and facilitate a more complete combined arms concept. Currently, the CAX is ground-centric and provides minimal directed integrated training in the area of Intelligence. Intelligence training can be improved through adoption of a program similar to that provided to the infantry Marines at CAX. Full incorporation of intelligence assets, in a live-fire environment, provides an effective training forum, increases the value of the CAX, and develops confident, capable Marines and Commanders.

Recommendation: The Marine Corps should increase the CAX training to include integration of intelligence systems and capabilities into the combined arms process.

BACKGROUND AND OVERVIEW OF THE COMBINED ARMS EXERCISE

The Combined Arms Exercise (CAX) is the United States Marine Corps' premier live-fire combined arms training exercise. Although the CAX is not the Marine Corps' largest training exercise, it is premier because of the high degree of realism attained by using live ordinance. The purpose of CAX is to exercise a Marine Air Ground Task Force (MAGTF) in the command, control, and coordination of supporting arms in support of maneuver warfare.

The current CAX evolved from an initiative of General Robert Barrow in 1979, and has matured significantly in the twenty-two years since he authorized its implementation. With the recent establishment of 29 Palms as the Marine Air Ground Task Force Training Command, the Marine Corps has an opportunity to expand and improve the value of the CAX program for MAGTF commanders. This paper reviews the existing CAX training program and targets three areas for improvement: Increasing the role of Intelligence Battlefield Operating Systems (BOS) in combined arms training, updating the task organization of the Tactical Training and Exercise Control Group (TTECG), and teaching and executing more complete MAGTF combined arms training. The modifications will result in a more comprehensive, aggressive, and sophisticated approach to live-fire combined arms training during CAX.

The three modifications aim to elevate the role of Intelligence to a status equal to other functions at CAX such as artillery, aviation and infantry. Since existing intelligence training and manpower is very limited at CAX, the program provides only a cursory and superficial examination of how to combine and integrate intelligence on the battlefield. Realistic and viable integration of intelligence capabilities at CAX is not just desirable, it is mandatory to achieve true combined arms.

Evolutionary ideas are not new to the CAX program; they are expected. A succinct review of CAX history illustrates the continual adaptations made to the program throughout its short life. The infantry-centric focus has remained steadfast since 1979, but constant improvements with both maneuver and non-maneuver elements have helped CAX retain its status as the premier live-fire exercise. Each of the three modifications identified in this paper are described in detail. Once implemented, they can boost the effectiveness of the CAX without requiring a radical shift in budget, personnel, or doctrine.

The recommendations presented in this paper build upon current CAX tenets that have repeatedly delivered the desired training results. The suggested improvements mirror successful and well-tested CAX techniques and procedures, and do not interfere with, or attempt to diminish the sanctity of the existing program. The role of intelligence as a tool for supporting effective maneuver can be intensified by adding the suggested components, each intentionally designed to complement today's CAX program.

The Early Days as Exercise *PALM TREE*

In December 1979, the Commandant of the Marine Corps, General Robert Barrow, directed Colonel Gerald Turley to teach Mechanized Operations and Combined Arms to Marines with the training to be conducted in 29 Palms, California. The exercise was designated *Palm Tree*, and it evaluated artillery and aviation support of battalion-sized maneuver elements. The *Palm Tree* exercise was an artillery-oriented exercise that lasted thirteen days and had a Final Exercise (FINEX) during which forces maneuvered and conducted live-fire training within a twenty-kilometer deep area. At that time, the exercise

received the personal attention of the Commandant of the Marine Corps, who observed *Palm Tree* training approximately every other month.¹

The first major evolution of the CAX occurred during the mid-to-late 1980s and early 1990s. The focus of CAX shifted to a formal evaluation of Marine units and Commanders during an expanded exercise. The exercise lasted approximately twenty days and included increased maneuver and fires. CAX also incorporated new technology in the form of a terrain model simulator called the Combined Arms Staff Trainer (CAST). Following completion of the FINEX, the Marines in the exercise force received a detailed debrief that chronologically reviewed FINEX in a highly critical and often confrontational manner. Both the Division-level Commander and his subordinate unit commanders received a written critique of the unit's performance.

The second major evolution of the CAX occurred in the mid-1990s. The focus of the exercise shifted from evaluating performance to training Marines in tactics, techniques, and procedures (TTPs) of combined arms integration. In 1994, Major General Sutton, the Commanding General of the Marine Corps Air Ground Combat Center assessed the CAX and identified three significant flaws. First, he recognized that the standard evaluation process was flawed because every unit arrived at CAX with varied degrees of proficiency due to operational commitments, staffing, and lack of pre-CAX training opportunities. Second, he recognized the negative impact the formal evaluation process (both the written reports to commanders and unnecessarily critical debriefs) had on the CAX training program.

1 Turley, Col Gerald, USMC(ret), interview by the author, 29 Palms, CA., 17 Nov. 2000.

Last, he recognized the importance of having an intelligence driven scenario for the CAX that would expand MAGTF training opportunities.

General Sutton directed fundamental changes to the CAX to address the problems. He directed that the formal evaluation be modified. In place of a formal report, he developed a quarterly trends report highlighting significant trends with Marine Corps-wide application and delivered it to all Marine Corps Division, Wing, and FSSG Commanders. The debrief methodology was also changed. Rather than a recitation of chronological actions, debriefs were structured to capture larger lessons learned and utilized a Socratic method that improved the quality of the debrief. The main exercise scenario was also modified to rely more heavily on unit-generated assessments of enemy capabilities instead of presenting a completely static enemy consisting of front-line infantry and mechanized forces.² This subtle shift to integrate realistic intelligence data forced the exercise participants to actively engage in the task of gathering intelligence.

Reflecting the change in emphasis, the name of the CAX control group changed from Tactical *Evaluation* and Exercise Control Group (TEECG) to Tactical *Training* and Exercise Control Group (TTECG). The exercise was increased to twenty-two days and no formal written evaluations were produced. Despite the change in emphasis, no adjustments to the TTECG Task Organization (T/O) were made. Significantly, the presence of the Commandant at CAX was no longer a common occurrence. As we can see in Figure 1, CAX has changed significantly over the past twenty years.

² Keenan, Col John, USMC, interview by the author, Quantico, VA., 14 Feb. 2001.

Facts Year	Length in days	Exercise Force Size	TTECG Size	Emphasis of CAX	Size of FINEX Area	Number of CAXes Conducted
1979	13	Battalion Reinforced	Four Officers	Air Artillery Coordination	20 K	2
1994	22	Approximately 2,100 Marines	15 Officers 43 Enlisted	Frag Order Scenario, Air Artillery Infantry Fire Support Coordination	50 K	10 8 Active Duty 2 Reserve
2000	22	Approximately 2,100 Marines	19 Officers 44 Enlisted	Deliberate Scenario, MAGTF Combined Arms Training	90 K	10 8 Active Duty 2 Reserve

Figure 1. Combined Arms Exercise Summary of Key Facts

The current CAX consists of a twenty-two day training period that focuses on integrating combined arms in support of maneuver. The training occurs at the tactical level of warfare in a mid- to high-intensity live-fire training environment. Over the course of the twenty-two days, training increases in complexity and difficulty from individual and small unit battle drills to night live-fire MAGTF level engagements.

CAX currently focuses on training the elements of the MAGTF as directed by Marine Corps Order 3500.11D (Currently under revision):

Mission ...is to administer and conduct the combined arms program in order to exercise and evaluate participating units in the command, control, and coordination of supporting arms in support of maneuver warfare. This

mission includes providing the training and guidance for exercise forces Marine Air Ground Task Forces (MAGTF's) in fire support planning and coordination. To achieve the necessary degree of realism, live ordnance, innovative training aides, and tactics and techniques of the real world opposition forces will be used. Inherent in this mission is the requirement to examine existing doctrine to ensure currency and adequacy and to use the exercises to identify innovative and more effective means of accomplishing the MAGTF mission.³

The mission emphasizes the *coordination* of supporting arms in a realistic setting.

The program's eight training goals identify the type of events required at CAX, yet the goals are broad enough to support a variety of activities and training scenarios. Five of the eight goals are listed to clarify the baseline requirements governing CAX operations:

Selected Required Training Goals

(1)Exercise fire support coordination and combined alarms in consonance with maneuver. Training priority will be placed on air ground integration in a mechanized/counter-mechanized environment. Units must be able to recognize the requirement for and integrate indirect fires and aviation concurrently on the same target while suppressing enemy air defense threats.

(2)Exercise the capability of each supporting unit to respond effectively to requests of the supported unit.

(3)Exercise unit capability to integrate maneuver with direct and indirect firepower.

(6)Exercise electronic warfare capabilities and resources and combined arms operations to include realistic employment of signal intelligence.

(8)Exercise organic tactical intelligence capabilities and employment of surveillance, reconnaissance and intelligence group (SRI) assets.⁴

The Exercise Force (EXFOR) for CAX is a Marine Air Ground Task Force comprised of approximately 2,100 Marines and sailors. The MAGTF

³ U.S. Marine Corps Order 3500.11D, 2

⁴ U.S. Marine Corps Order 3500.11D, Enclosure 1, 1

command element is a regimental headquarters. The Ground Combat Element (GCE) of the MAGTF is an artillery battalion and an infantry battalion (reinforced). The Aviation Combat Element (ACE) "will be structured to reflect the capabilities of an independent Marine aircraft group."⁵ The Combat Service Support Element (CSSE) is task organized by the respective Marine Forces (MARFOR) and is seldom truly integrated into the tactical training at CAX.

The current CAX schedule is organized into three separate and distinct blocks of training. Each block is structured to achieve specific combined arms training objectives in a live-fire environment. This process, referred to as the building block approach, has been used successfully in the past six years to refine, and in some cases, introduce combined arms concepts to participating Marines. Figure 2 details the current CAX training schedule.

⁵ U.S. Marine Corps Order 3500.11D, Enclosure 4, 1

CAX TRAINING SCHEDULE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Arrival Day	Classes and Briefs	Classes 400 Series	CAST Prac App 400 Series HAC Planning	ASCEX I 400 Series	ASCEX II 400 Series	FSCEX I 400 Series
DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14
LARSC MAC Co 1	M&C Co 1 M&C Co 2	M&C Co2 M&C Co 3	M&C Co3 M&C Tank Co	CAST I ASCEX III	CAST II	FSCEX II
DAY 15	DAY 16	DAY 17	DAY 18	DAY 19	DAY 20	DAY 21
FSCEX III	FINEX Prep	FINEX	FINEX	FINEX	Commanding General's Outbrief	FINEX Debrief
DAY 22	DAY 23	DAY 24	DAY 25	DAY 26	DAY 27	DAY 28
EXFOR Departure Day						

Figure 2. Current CAX Schedule

Block-one training encompasses the first seven days (days 1-7) of CAX and consists of classroom instruction, limited individual Military Occupational Specialty (MOS) training, and infantry-specific training, such as, platoon and company fire and movement and fire and maneuver battle drills. Classroom instruction covers routine administrative information, an overview of the CAX program, and safety briefs designed to familiarize Marines with the hazards of live-fire training in the desert.

Block-two training covers four days (days 8-11) and builds upon the techniques and procedures introduced in block-one. The majority of block-two training takes place in the field and is a practical application of concepts and skills. The training focuses on live-fire

combined arms integration at the company team level. During block-two, several of the training objectives from block-one are grouped and navigated together. As a unit moves to block-three, the entire sequence of training objectives is consolidated and executed by the MAGTF.

Block-three training encompasses the remaining eight training days (days 12-19) and is a combination of indoor rehearsals and live-fire training. Block-three continues the CAX building block approach and emphasizes combined arms integration at the battalion task force and MAGTF level. Commanders, working with the Marines of the TTECG, can increase or decrease the difficulty level of the events within any of the blocks depending on unit proficiency and safety considerations.

In the early 1990s when the CAX transitioned into a training exercise, the TTECG abandoned their role as evaluators and adopted their new role as trainers/instructors. The TTECG instructors (also referred to as Coyotes) differ from the traditional formal military instructor familiar to most Marines. The TTECG Marines operate in a teacher/coach capacity.

As Major Dan Newell, former Operations Officer at TTECG, expressed during his time at TTECG:

It is important to remember the commodity that this staff (TTECG) offers the exercise forces. It is not doctrine—they can get that by reading a book at home station. It is a cumulative experience of numerous prior exercise forces—what worked and what didn't. We offer them the chance to gain that experience without making those mistakes themselves. Instead, they get the chance to make new mistakes. Exercise forces want from us (TTECG) what they don't get from books and formal schools—the nuts and bolts of how to do something. It is, therefore, proper that we focus on techniques and procedures not on tactics. We train them in the techniques and procedures, the tools, with which to bring about future tactical solutions. Like it or not the influence of the TTECG is enormous. The resulting responsibility is that what we teach and advocate must not be ludicrous—it must be thoroughly scrutinized and proven to work. It will be the unwritten doctrine, techniques, and procedures with which the units that come

through CAX will go to war.⁶

Currently, TTECGs primary role is to teach techniques and procedures of combined arms integration, control CAX training events, and ensure compliance with doctrine and existing safety regulations for the live-fire portions of CAX. During the twenty-two day event, TTECG Marines initially serve as classroom instructors and then transition to the informal 'hands-on' method of teaching and coaching. Participating units interact and receive interactive instruction from the TTECG Marines during classes, practical application exercises, and debriefs.

As the CAX continues to evolve, its place in the Marine Corps training hierarchy remains prominent. To maintain its premier status, the present day CAX does not need an overhaul to dramatically improve the role of intelligence as a supporting arm to maneuver elements. However, CAX does need to upgrade the way it addresses the requirement to "exercise the organic intelligence capabilities" (Training Goal 8, MCO 3500). Using the building block approach and scenario already in place, the next CAX evolution requires expanding the scope of the curriculum to include more instruction in Intelligence techniques and procedures. TTECG needs to modernize its 1980 Task Organization (T/O) to support the curriculum expansion and increase the number of TTECG Marines supporting enhanced integration of intelligence systems.

⁶ *Standard Operating Procedure for the Tactical Training and Exercise Control Group*. Preface. 17 Dec 1999.

CURRICULUM ENHANCEMENTS FOR INTELLIGENCE

MCAGCC is presently conducting the best CAX in the two-decade history of the program.⁷ The current training focus is correct and fulfills the mission defined in MCO 3500.11D. After action comments from commanders at all levels routinely emphasize the value of CAXs unique live-fire training environment. However, to keep pace with the Marine Corp's doctrinal evolution from infantry battalion-centric to MAGTF operations, CAX must expand its curriculum so Marines throughout the MAGTF, regardless of MOS, can improve their ability to interact and support the MAGTF in all cycles of planning and executing the combined arms process.

Each year, 21,000 Marines, active and reserve, train at CAX. Of these Marines, only those in the infantry battalion receive significant periods of instruction and debriefs by TTECG Marines. A tremendous opportunity exists to train all Marines in the tactics, techniques, and procedures for employing their respective "arms" in a mid-to-high intensity scenario.

For example, Marines with specialties of Aviation Command and Control, Artillery, Logistics, Communications, Intelligence and Aviation rarely receive detailed debriefs of their performance from TTECG. Formal discussions of MOS-specific issues are not conducted. Considerations for how to integrate their assets to fully support the commander's scheme of maneuver are superficially examined and rarely reviewed with members of TTECG.

Teaching TTPs to Marines in intelligence fields is critical to the relevance of CAX when integrating combined arms in the close fight.

⁷ Speise, Colonel Mel G, USMC. *Information Paper: MAGTF Training Enhancements at CAX*, Written in support of expanding CAX training, 10 Nov. 2000

Expanding the scope of the intelligence training offered at CAX provides key Marines an increased understanding of how intelligence assists in planning and executing combined arms operations.

The present CAX includes intelligence training. However, a review of the CAX curriculum, by training block, clearly illustrates the disparity between the robust infantry training and the limited training provided to intelligence Marines.

Block-One Description

Block-one classroom instruction reviews fundamental procedures for integrating combined arms at the individual, team, and unit level during daylight and night conditions. Individual instruction ranges from basic forward observer procedures to introductory-level forward air controller classes.

After basic skills are reviewed, more advanced classes highlight specific techniques and procedures integrating combined arms. Classes emphasize the importance of developing safe unit standing operating procedures (SOPs) for integration and clearance of direct fire, indirect fires, and aviation delivered ordinance. Block-one instruction also introduces combined arms techniques to Fire Support Teams (FiST,) battalion, and regimental staffs.

The requirement to exercise individual techniques and procedures for collecting, processing, and analyzing large volumes of tactical information is not incorporated into the current block-one curriculum. There is no MOS training during block-one for MAGTF Intelligence Marines with the depth provided to Infantry Marines. The absence of credible intelligence instruction during block-one contributes to the exercise force discounting the importance of intelligence during the CAX.

As we can see in figure 3, the total instructional hours currently provided to Intelligence Marines are significantly less than Infantry Marines during block-one.

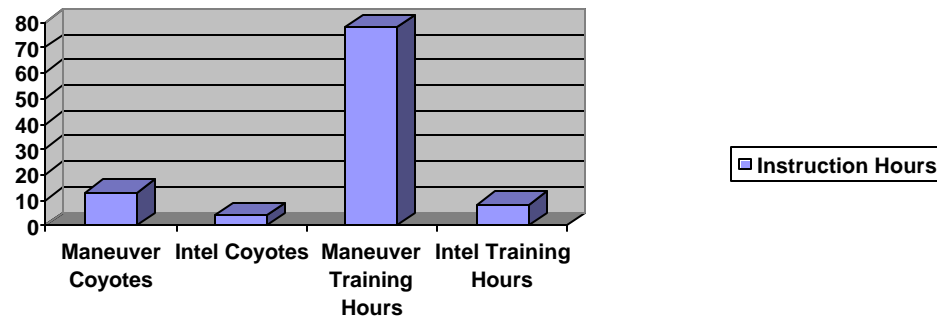


Figure 3. CAX 2000: Intelligence and Maneuver Training Comparison

Simultaneous with the execution of the classroom instruction, Infantry Marines undergo unit level training in the field. The unit training takes place on the 400 series ranges. The 400 series ranges are supported and debriefed by TTECG and provide a building block approach to live-fire training with platoon and company attacks against a fortified position.

Block-One Enhancements

Completely integrating Intelligence Marines into the combined arms process requires three significant enhancements to block-one training. First, increase individual proficiency by teaching proven techniques and procedures for Intelligence Marines. The techniques and procedures should encompass a wide variety of individual skills from intelligence preparation of the battlefield (IPB) for support of the commanders tactical electronic warfare requirements to maintaining an accurate enemy situation in the combat service support operations center (CSSOC).

Second, instruct commanders and staffs on combined arms employment requirements and describe the capabilities and limitations of MAGTF intelligence systems. The instruction should highlight integration techniques and procedures for sensors, counter battery radar, Unmanned Aerial Vehicles (UAVs), and Radio Battalion in the combined arms close fight. Today, capabilities such as electronic warfare are not thoroughly understood, tasked, or integrated into the combined arms process at CAX. Routine execution of Electronic Attack as a component of combined arms in MAGTF level engagements should be taught and exercised with the same emphasis that aviation, artillery, and direct fire currently receive during block-one.

Additionally, commanders and staffs should be instructed in techniques and procedures for developing and continually maintaining a common operating picture throughout the MAGTF. Experience in the CAX has shown that while individual elements of the MAGTF recognize and disseminate information of importance effectively within their respective community (CE, ACE, GCE, CSSD), information of value to other MAGTF elements is not routinely disseminated in accordance with the commander's stated goals.

Last, conduct a review of the requirements articulated in the Marine Corps Planning Process (MCP) directed at junior Intelligence Marines who all are (or may be) assigned as an Officer in Charge or Non Commissioned Officer in Charge (OIC/NCOIC) of a detachment. Intelligence Marines are often unaware of their responsibilities to the commander during the planning process. While many Intelligence Marines are confident and capable executing specific tasks, many are intimidated by senior Marines and reluctant to aggressively participate in the planning process as a special staff officer for the commander. Clearly articulating, both for the Intelligence Marine and the staff,

the responsibility and importance of integrating MAGTF intelligence capabilities during the planning process incrementally increases the efficiency and effectiveness of the staff as it generates a plan that achieves the commander's intent.

Block-Two Description

Block-two training is designed to exercise combined arms fire and maneuver at the company team level. The scenarios build upon the information reviewed and presented during block-one. During block-two, commanders integrate combined arms during offensive and defensive scenarios. The major CAX events in block-two are: the Light Armored Reconnaissance Screen Course (LARSC) the Mobile Assault Course (MAC), and the Helicopterborne Assault Course (HAC).

During block-two, the MAGTF and subordinate commands begin detailed intelligence integration. Although block-two targets company team level training, the ability to conduct higher level intelligence operations exists in the Combat Operations Centers (COCs) and the Fire Support Coordination Centers (FSCCs) that are controlling maneuver and coordinating the fires supporting the training. Intelligence is not formally integrated into the scenario and is not woven into the methodology for teaching company level combined arms.

Block-Two Enhancements

Recently, the LARSC was restructured to integrate the Light Armored Reconnaissance (LAR) scouts in the role they would fill for the commander during a screen mission. Expanding the scenario was manpower intensive, but allowed the inclusion of scouts in a manner consistent with their doctrinal employment. The change resulted in commanders relearning lessons regarding training, tasking, and equipping Marines designated to gather information.

Likewise, constructing a more complex enemy scenario in block-two, designed to exercise the MAGTF intelligence cycle, allows initial execution of the collecting, reporting, analysis and dissemination sequence. An enhanced scenario can initiate the use of Electronic Warfare (EW), counter battery radar, and UAVs to exercise the reporting sequence between battalion and MAGTF elements in block-two training without degrading or impacting the existing company team training. The intelligence cycle, formally practiced and refined with the guidance of TTECG Intelligence Marines, could be exercised in a similar fashion as artillery and aviation during block-two. By developing skills for executing the intelligence cycle early in the CAX program, more sophisticated skills can be practiced during block-three.

A critical capability of the MAGTF is the Radio Battalion detachment. During block-two, little thought is devoted to the tasking, positioning, and integration of the Radio Battalion detachment as a component of combined arms. Block-two represents an opportunity to exercise this component and educate commanders and staffs on the practical employment considerations associated with EW integration.

Another benefit from expanding the MAGTF training in block-two is increased time to practice the rapid and complete transmission of changes to the enemy situation through movement of forces and Battle Damage Assessments (BDAs). Simple in concept, the processing and dissemination of accurate information between pilots, front-line infantry units, and CSSD elements represents a significant challenge for the MAGTF. Currently this is practiced only during limited portions of block-two training. The four-day period of block-two provides time to methodically practice TTPs for constantly revising the enemy situation, disseminating the information throughout the MAGTF, and debriefing the effectiveness of the techniques employed.

Block-Three Description

Block-three training focuses on integration of combined arms at the MAGTF level and requires detailed integration between all elements of the MAGTF. Significant elements in block-three are: the Combined Arms Staff Trainer (CAST), Fire Support Coordination Exercise II and III (FISCEX II and III), and the Final Exercise (FINEX).

The CAST is an indoor terrain model simulator used to rehearse techniques and procedures before commencing live-fire training. The CAST is a tool for the MAGTF commander, his staff, and the subordinate commanders to wargame operation orders and schemes of maneuver in a controlled environment. Participants in the CAST include Commanders, staffs, and designated key personnel. While using the CAST to test plans, the MAGTF and TTECG interact and discuss, in detail, the commander's training concept focusing on techniques and procedures for integration. The CAST also provides a final opportunity to conduct an informal fratricide risk assessment before executing live-fire combined arms during the FISCEX II and III.

Fire Support Coordination Exercises II and III are live-fire rehearsals of the FINEX in a Tactical Exercise Without Troops (TEWT) mode. The MAGTF rehearses maneuver, fires, and communications. Fire Support Coordination Exercise II is a rehearsal of the deliberate attack phase of FINEX. Fire Support Coordination Exercise III is a rehearsal of the MAGTF defense in sector. The live-fire rehearsals highlight integration problems, synchronization issues, and potential fratricide areas for the MAGTF commander prior to executing FINEX.

FINEX is the culminating event of the CAX. FINEX is a two-and-one-half day exercise designed to exercise, at the MAGTF level, the techniques and procedures reinforced during the preceding CAX events. All elements of the MAGTF participate in FINEX. FINEX requires detailed

integration of all elements of the MAGTF in order to execute safe command, control, and coordination of supporting arms and achieve the training goals set forth in Marine Corps Order 3500.11D.

Block-Three Enhancements

The building block approach to training during block-one and two allows a significant enhancement in the execution of block-three intelligence training. Having streamlined techniques of collection, analysis, and dissemination during prior events, the MAGTF is now capable of increasing the complexity of the training during block-three. Issues such as maintaining a common operating picture throughout the MAGTF, procedures for employment of sensors, counter battery radar, and Unmanned Aerial Vehicles (UAVs), and integrating electronic warfare, specifically electronic attack, have previously been exercised and employed as a components in the combined arms close fight.

Since the majority of the MAGTF intelligence techniques and procedures are only being refined, the TTECG can challenge the MAGTF by continually revising and disseminating a more complex enemy situation, reflecting an opposing will, and monitoring EXFOR execution of transmission of changes to the enemy situation through Battle Damage Assessments.

Currently, the lack of structured block-one and block-two training for the Marines in the intelligence community, specifically Radio Battalion, becomes apparent during block-three. The MAGTFs lack of a clear understanding of asset employment often results in a loss of individual training, a diminished capability to conduct electronic warfare, and a lost integration opportunity for MAGTF officers. As commanders struggle during block-three with the difficulty of live-fire execution of combined arms, they naturally gravitate to the assets most

familiar to them. The end result: commanders discount the capabilities of unfamiliar assets such as intelligence. Only by dedicating the time, personnel, and training, can commanders competently employ the diverse and critical capabilities of MAGTF intelligence components.

ADJUSTING THE TTECG TASK ORGANIZATION FOR INTELLIGENCE STAFF

The staffing of the TTECG directly reflects its origin as an organization designed to control and teach mechanized combined arms operations circa 1980. With the exception of three officers, a Marine Gunner and one Non-Commissioned Officer, TTECG is operating with the T/O of 1980s.⁸ Significantly, recent changes to the TTECG T/O have occurred as a result of death or injury during training.

The organization remains heavily weighted with Marines from ground combat arms specialties and downplays the interaction and role of supporting MOSs. Although Marines with ground combat qualifications are critical for safe and successful CAX training, they offer guidance in fire support planning and coordination from a maneuver perspective. The current director of the TTECG is a colonel from a combat arms MOS. Six battlefield operating systems are represented on the TTECG staff: maneuver, fires, aviation, intelligence, communications, and logistics; however, most of the TTECG instructors have ground combat arms MOSs.

Intelligence

A commander's ability to manage information is closely linked to his success as a combat leader. As the Marine Corps relies on more sophisticated and technologically advanced systems for gathering tactical intelligence on enemy activity, it is important to educate commanders and Marines on the capabilities and limitations of these systems. TTECG is uniquely positioned to help commanders refine

techniques and procedures for gathering perishable information and rapidly processing and disseminating intelligence to the appropriate element.

Processing information during combined arms evolutions is often identified as a critical vulnerability of Marine units. During a CAX in early 2000, an LAR unit was executing a screen in the MAGTF security area. In the course of executing the screen, the LAR company commander reported the effects of his engagement, Battle Damage Assessment (BDA) to the MAGTF. Additionally, the MAGTF received BDA from pilots covering the withdrawal of the LAR company, BDA from reconnaissance elements observing the engagement, and radio signals containing BDA collected by Radio Battalion. Due to the problems processing and disseminating the collected information, the MAGTF was unable to pass correct status on the enemy force to subordinate units. As a result, the MAGTF main effort, the infantry battalion, did not receive information on the enemy until its tank company engaged with the lead elements of the enemy force.

The MAGTF level scenarios at CAX require Marines to practice intelligence techniques and procedures for integration in a demanding environment. Increasing the TTECG intelligence staff to allow more education in techniques for collecting, updating, and disseminating information would exercise this critical vulnerability. Employing the building block approach to training would increase the value of CAX for Intelligence Marines by increasing integration and synergy achieved during block-three. The true value of more TTECG trainers would be a better-educated MAGTF, conversant in the integration of combined arms.

⁸ Speise, Colonel Mel G, USMC. *Information Paper: MAGTF Training Enhancements at CAX*, Written in support of expanding CAX training, 10 Nov. 2000

Appendix A depicts the most recent task organization of the TTECG. A proposed modification to the TTECG Intelligence T/O that corrects the shortfall of instructors and exercise controllers is included in Appendix B. Under the proposed T/O, Intelligence Marines would receive the same depth of instruction currently provided only to the infantry battalion task force.

Figure 3 (refer to page 13) compares the MOS-specific training received by Intelligence Marines and Infantry Marines. The total hours of training directed at Infantry Marines is nine times greater than the hours received by Intelligence Marines. More infantry training is presented to Infantry Marines because an adequate number of Infantry Marines are available on the TTECG staff. Expanding the scope of the intelligence training offered at CAX and adding the professionals needed to conduct the training would provide Marines throughout the MAGTF with scenario-driven training envisioned by General Sutton. The combination of increased staffing and scenario-driven training will exercise the tactical realities of operating with a small force. Marine units, embedded within a small tactically oriented force structure, cannot absorb large casualties. We must mass combined arms effects, not of forces, to accomplish the task. Increased exercising of the intelligence cycle at CAX will allow Marines to compensate for small physical mass by massing combined arms effects, at the point and time desired by the commander, in response to enemy actions.

INTELLIGENCE DURING THE DEFENSE IN SECTOR SCENARIO AT CAX

The one feature that distinguishes intelligence from the other command and control functions is that *intelligence deals directly with an independent, hostile will personified by the enemy.*⁹

⁹ Marine Corps Doctrinal Publication (MCDP) 1, *Intelligence*, 13. June 1997.

An example from the defensive scenario conducted during FINEX is examined to illustrate how increased emphasis on intelligence during combined arms training would benefit the MAGTF and individual Marines. The example highlights the importance of integrating all aspects of combined arms from direct fire, artillery, and aviation delivered ordinance to the integration of electronic attack in the CAX training scenario.

For example, block-one and block-two training for Intelligence Marines would cover techniques and procedures for individual and small units preparing and executing tactical intelligence in a mid-to-high intensity combined arms environment. Execution of tasks utilizing standing operating procedures during expanded block-one and two training would allow the refinement of techniques and procedures and SOPs. Most importantly, the intelligence cycle would be thoroughly scrutinized prior to integration into MAGTF combined arms training during block-three.

The most demanding and dangerous period of training executed during CAX is the day and night MAGTF defense in sector. The defense in sector scenario reflects a contingency that a MAGTF could face when linking up with Maritime Pre-Positioned Force (MPF) assets. Establishing a defense, awaiting follow-on forces, and preparing to transition and commence offensive operations are courses of action anticipated in the MPF concept. The defense in sector scenario accurately reflects the limited amount of time available for a MAGTF to prepare and execute effective integrated combat operations. The ability to smoothly integrate force multipliers such as electronic attack in conjunction with fires, rapid dissemination of information on enemy activities, and employment of a wide variety of lethal and nonlethal

methods to defeat the enemy, requires advanced individual skills and detailed concepts for employment.

A description of the defensive scenario is required to fully understand how the intelligence systems function at CAX. The example below reviews how enhancements to the integration of intelligence systems will expand the current concept of combined arms taught during CAX. Review of the scenario demonstrates the importance of a detailed and consistent depiction of the enemy. The review underscores the importance of experienced assistance from TTECG to guide the commander and his staff through the process of integrating intelligence systems into the combined arms process.

FINEX Defense in Sector Overview

Several administrative requirements are important to note when reviewing the CAX scenario. First, all tactical missions assigned to the MAGTF directly support the combined arms training objectives of the CAX. Second, commanders have approximately ten days to generate a concept of operations that they first rehearse in the CAST, then TEWT during FSCEX III, and finally execute on the second day of FINEX. Third, the defense in sector tactical scenario is straightforward. The MAGTF is the main effort of a coalition force. The MAGTFs mission is to establish a defense to protect the port and airfield of 29 Palms in order to prevent the disruption of the arrival and offload of follow-on forces into the port and airfield of 29 Palms.

FINEX Enemy Situation

The general enemy situation developed and presented by TTECG involves enemy forces from the fictional country of The Peoples Republic of Samara. The Samaran army, depicted as an aggressor to neighboring countries in the scenario, is structured with a conventional task organization. Units and systems incorporating all six

Battlefield Operating Systems are structured within the its task organization. Forces at the army level are described in the general situation portion of the Combined Task Force (CTF) operation order. Enemy corps and army level forces are depicted and allow flexibility and consistency when modifying the enemy situation. The special situation portion of the CTF order describes elements of a Samaran Corps operating in the MAGTF area of interest. During the defensive portion of FINEX, the MAGTF faces a reinforced brigade of conventional armored and mechanized forces operating within the MAGTF area of responsibility.

Initial presentation or "scripting" of the enemy activity occurs approximately 180 days before a MAGTF deploys to CAX. When the MAGTF arrives in 29 Palms, a detailed enemy order of battle is presented by TTECG Intelligence Marines acting as members of the CTF headquarters. This information is presented through a variety of methods including use of products derived from national assets. The information is detailed and approximately ninety percent complete. (A relatively certain enemy situation is required to allow deliberate planning and ensure units are positioned to meet the combined arms training objectives.) This combination of information, along with continuing Intelligence Summaries (INTSUMs) from the CTF, provides a degree of uncertainty that forces the MAGTF commander to utilize the intelligence cycle before and during FINEX.

In the FINEX scenario, enemy forces expose the MAGTF to traditional threat weapons employed during a mid-to-high intensity conflict. Systems currently available for purchase on the open market such as the Marula Unmanned Aerial Vehicle are also included in the Samaran order of battle. Processing information on civilian or international military systems reinforces the availability of material

to the enemy, requires the commander to use non-standard sources to determine capabilities, and educates MAGTF officers on the increase in capabilities and lethality that available technology can bring for a relatively minor cost.

TTECG Role in Presenting Enemy Activity during FINEX

Due to the requirement to achieve specific live-fire training objectives, enemy analysis is limited during the training. The enemy situation is scripted by TTECG in a method that requires a MAGTF to use all six tenants of the intelligence cycle: Planning and Direction, Collection, Processing and Exploitation, Production, Dissemination, and Utilization. However, the scripted actions of the enemy presented during FINEX are rarely completely linked by the EXFOR using this process.

In the ten days prior to FINEX, the enemy situation is developed and disseminated by the MAGTF through a wide variety of methods. The methods may include: input through visual reconnaissance (ground and air reconnaissance), INTSUMS, ground sensors, Unmanned Aerial Vehicles (UAVs), and HF and VHF electronic signals. As the FINEX training commences, enemy activity is passed to MAGTF elements that have contact with the enemy forces.

A true ability to input information into the MAGTF intelligence cycle is limited by the small number of TTECG Marines available to script information. As a result of this limitation, information dissemination is directed towards the Light Armored Reconnaissance Company, counter battery radar, ground reconnaissance Marines, and units tasked routinely as collectors. A limited distribution of "captured" enemy documents is executed during FINEX to exercise the process involved in exploitation of battlefield information.

Visual reconnaissance input is scripted to several friendly units: pilots who can observe enemy zones of action, ground reconnaissance teams who can observe enemy forces, and UAVs that are positioned to gather information on the enemy. TTECG provides input for sensors when the MAGTF has tactically inserted actual or dummy sensors in the training areas. To execute electronic scripting of enemy tactical radio nets, TTECG personnel and Marine volunteers are positioned in the FINEX training areas in the days preceding FINEX. Operating from established restricted fire areas (RFAs), the TTECG Marines and volunteers generate radio traffic designed to replicate principal Samaran brigade and battalion command and control and fire support communications nets. The information is scripted and designed to reinforce the enemy's ability to conduct courses of action during FINEX.

During FINEX, when enemy artillery is tasked to fire upon the MAGTF, radio traffic replicating conduct of fire nets is generated to provide tactical collection for Radio Battalion detachments. Simultaneously, information is passed to the counter battery radar OIC through voice radio traffic, passing the location of the enemy firing unit, number of rounds fired and the impact grid. Additionally, the TTECG coordinates the engagement of USMC aircraft by enemy Surface to Air Radar represented by a Lockheed Martin emitter. The emitter provides signatures replicating enemy air defense systems and is activated in conjunction with other enemy systems when aircraft are within the envelope of the system.

The depiction of a detailed enemy situation and presenting it in a consistent pattern is manpower intensive. However, it is crucial for the MAGTF to have a detailed threat to underscore the importance of

planning for and integrating intelligence into the combined arms process during FINEX.

MAGTF Mission and Training

The mission for the MAGTF during the defense in sector is to prevent disruption of follow-on forces at the port and airfield of 29 Palms. As the MAGTF selects courses of action and determines the MAGTF scheme of maneuver, MAGTF intelligence elements are truly integrated for the first time. Unlike the elements of the infantry battalion task force, the MAGTF has not exercised the detailed, time sensitive, and communications dependent techniques and procedures for integration of MAGTF intelligence assets with TTECG during block-one and block-two training. As a result, detailed integration and concepts for employment of intelligence assets during course of action development are often overlooked or discounted as a component of the combined arms fight.

The standard scheme of maneuver employed by most MAGTFs is to establish a MAGTF security area forward of the battalion task force. To the rear of the MAGTF security area, a task force sector is designated by the MAGTF Commander and defended by elements from the battalion task force.

Most task force commanders employ successive company sized engagement areas integrating obstacles, indirect fires, aviation delivered ordinance, and direct fire from the heavy weapons of the battalion task force. The battalion task force will normally execute several company size engagements during the standard schemes of maneuver. Following execution of the company engagements and the withdrawal of the combat forces, the battalion task force fights a task force engagement area integrating obstacles, fires, and direct fire to defeat the remaining enemy forces, as depicted in Figure 4.

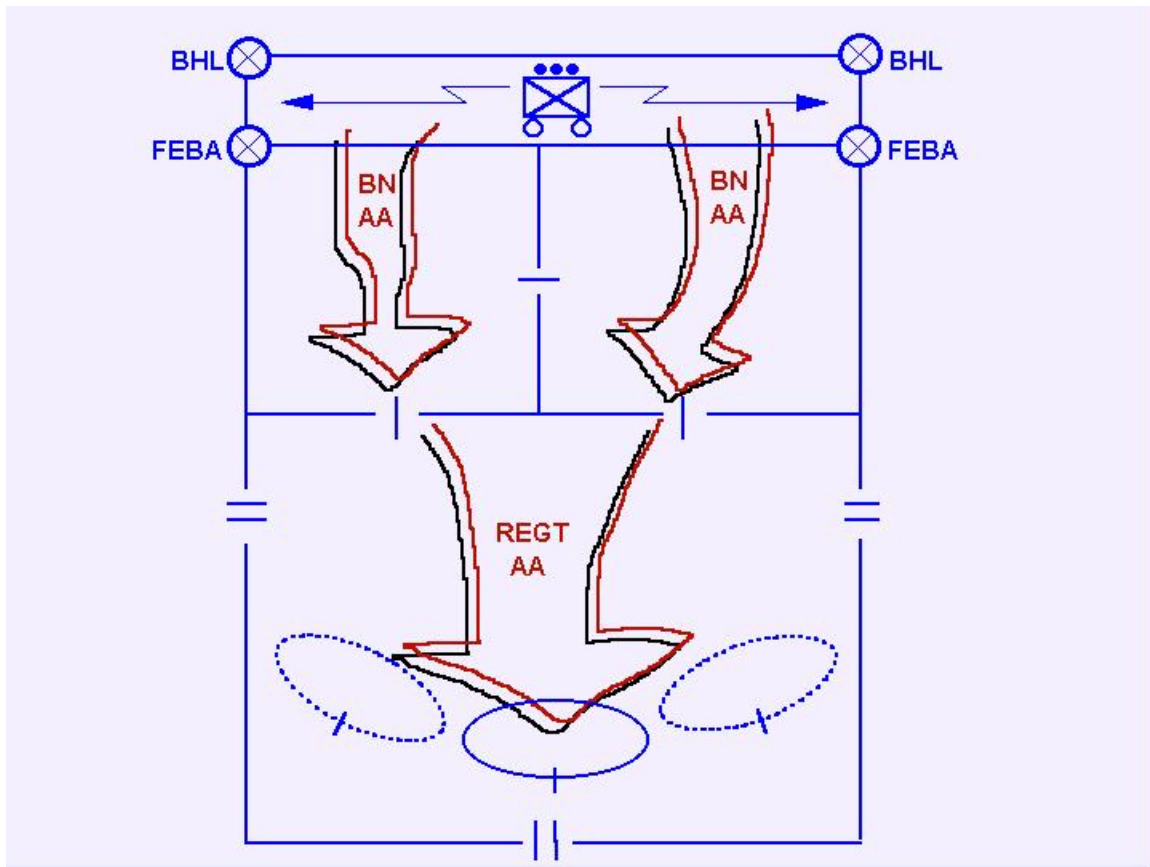


Figure 4. MAGTF Sector for FINEX

In the FINEX scenario, the MAGTF receives a fragmentary order from higher headquarters tasking the MAGTF to conduct a counterattack following the defeat of the Samaran force in the battalion task force engagement area. To execute the counterattack, the battalion task force will usually task organize a force capable of controlling supporting arms, conducting a route clearance, and re-establishing the task force sector.

The result of detailed block-one and block-two training supported by TTECG Marines is evident in the integration attained in the defensive scenario by the infantry battalion task force. Planning, integrating, and delivering fires in close proximity to ground forces

sounds simple conceptually, but requires thorough knowledge of weapons capabilities, precise clearance procedures, and the ability to maintain a high degree of situational awareness in a fluid environment. The experience accumulated by the members of the battalion task force during block-one and block-two allows the relatively smooth integration of engineers, maneuver elements, indirect fire, and aviation on the terrain of the commander's choosing. The experience also allows the TTECG to increase the level of difficulty for the battalion task force training without overwhelming the infantry battalion task force commander and staff.

The MAGTF commander and his staff face a more difficult challenge during block-three training. Although many aspects of integration are reviewed during training in the CAST and during FSCEX III, command and control and intelligence assets of the MAGTF are being fully exercised in a defensive scenario for the first time during FINEX. The techniques and procedures for integrating command and control and the intelligence cycle into the combined arms defense is not taught prior to FINEX.

Additionally, relatively simple tasks, discounted during the planning process, cause significant friction for the MAGTF during FINEX training. Tasking and positioning electronic warfare assets, tasking and positioning counter battery radar, and completely integrating the ACE into the intelligence cycle cause problems when executing together for the first time in a MAGTF scenario. The absence of block-one and block-two training prohibits full interaction between these elements until FINEX.

The size and capabilities of the enemy force are designed to require the MAGTF commander and his staff to link MAGTF actions to the enemy force. The Samaran forces are deliberately designed to present an

enemy that requires the MAGTF to "to identify and attack critical vulnerabilities and those centers of gravity without which the enemy cannot function effectively. This means focusing outward on the particular characteristics of the enemy"¹⁰ The MAGTF commander, through analysis of the enemy determines the center of gravity and the critical vulnerabilities of the Samaran forces.

Designating priority intelligence requirements (PIR) and high pay off targets (HPT) are two examples of doctrine that are exercised due to the detailed enemy situation. Designation of priority intelligence requirements and attack of high pay off targets requires synchronization of effort within the MAGTF during planning and execution, and allows the MAGTF commander to establish and exercise priorities for reporting, engagement, and dissemination of information throughout the MAGTF. The structure of the enemy force provides a common picture to commanders and staffs during execution of FINEX. Additionally, the structure of the Samaran forces allows the MAGTF commander's intent to be exercised during the live-fire training.

The commander's intent is exercised through the analysis of the enemy, targeting of specific weapons systems, and attacking critical vulnerabilities or centers of gravity. The composition of the enemy force allows the MAGTF Commander to execute in accordance with doctrine through application of timely and accurate combat reporting of MAGTF intelligence assets. The execution of this aspect of FINEX is often underutilized due to unfamiliarity with capabilities, inexperienced staffs, and lack of techniques and procedures for employment at the MAGTF level.

¹⁰ Marine Corps Doctrinal Publication, *Warfighting*, 77. June 1977.

When designing the FINEX, the capabilities of the enemy force are carefully matched to the capabilities of the MAGTF. The goal when scripting the FINEX is to challenge, yet not overwhelm, the MAGTF as it executes the combined arms training. Every effort is made to provide a consistent enemy situation using national, theater, and unit assets to the MAGTF. The TTECG, when scripting the enemy situation, attempts to force the MAGTF to synchronize and employ the wide variety of information gathering capabilities available in the MAGTF. Used correctly, these assets present the commander with a clear picture of the enemy composition, disposition, and strength, enhance his ability to achieve combined arms, and allow him to exercise his intent.

INTELLIGENCE AS A COMPONENT OF THE COMBINED ARMS PROCESS AT CAX

Marine Corps doctrine emphasizes combined arms, yet Marines seldom integrate non-lethal methods in the planning and execution of the combined arms process during CAX. One example of the current lack of emphasis on non-lethal methods in the combined arms definition is found in MCCDP 1, *Warfighting*:

We can expand the [combined arms] example to the MAGTF level:...We use artillery and close air support to support the infantry penetration, and we use deep air support to interdict enemy reinforcements that move to contain the penetration. Targets which cannot be effectively suppressed by artillery are engaged by close air support. In order to defend against the infantry attack, the enemy must make himself vulnerable to the supporting arms. If he seeks cover from the supporting arms, our infantry can maneuver against him.¹¹

The combined arms example rightfully portrays the integration of aviation, artillery and maneuver, but does not include integration of intelligence assets as a component of the combined arms process. To increase the Marine Corps understanding of MAGTF combined arms

¹¹ Marine Corps Doctrinal Publication, *Warfighting*, 95. June 1997.

capabilities, the TTECG must emphasize the importance of routinely integrating intelligence capabilities of the MAGTF as an element of combined arms at CAX.

The example below depicts a standard concept of combined arms presented in the TTECG class, Defensive Operations. In the example, an enemy force consisting of approximately two battalions of mechanized infantry, one company of armor, and one platoon of surface to air missiles (SAM) attacks toward the MPF offload port. The enemy force has a battery of artillery in direct support protected by an organic SAM capability.

The defending Marine Battalion Task Force consists of an infantry battalion, a tank company, two engineer platoons, two platoons of Assault Amphibian Vehicles (AAVs), and a detachment of Military Police (MPs). The task force is allocated between eight and ten sorties of fixed and rotary wing CAS, has an artillery battalion (reinforced), a Radio Battalion detachment and Unmanned Aerial Vehicle (UAV) assets in direct support. The full composition of the task force is important because it supports maximum training at lower levels and permits execution of the commander's intent through the allocation of combined arms assets in response to the changing enemy situation.

In figure 5 below, we see the MAGTF main effort fighting a Task Force Engagement Area (EA). The defending Task Force has tied its position and obstacle to terrain and has integrated its combined arms assets to achieve maximum destructive effect on the enemy. *This is a sound, doctrinally correct depiction of the combined arms process.* This is the focus of CAX, and it is as far as the evolution has progressed given the current T/O and resources of TTECG.

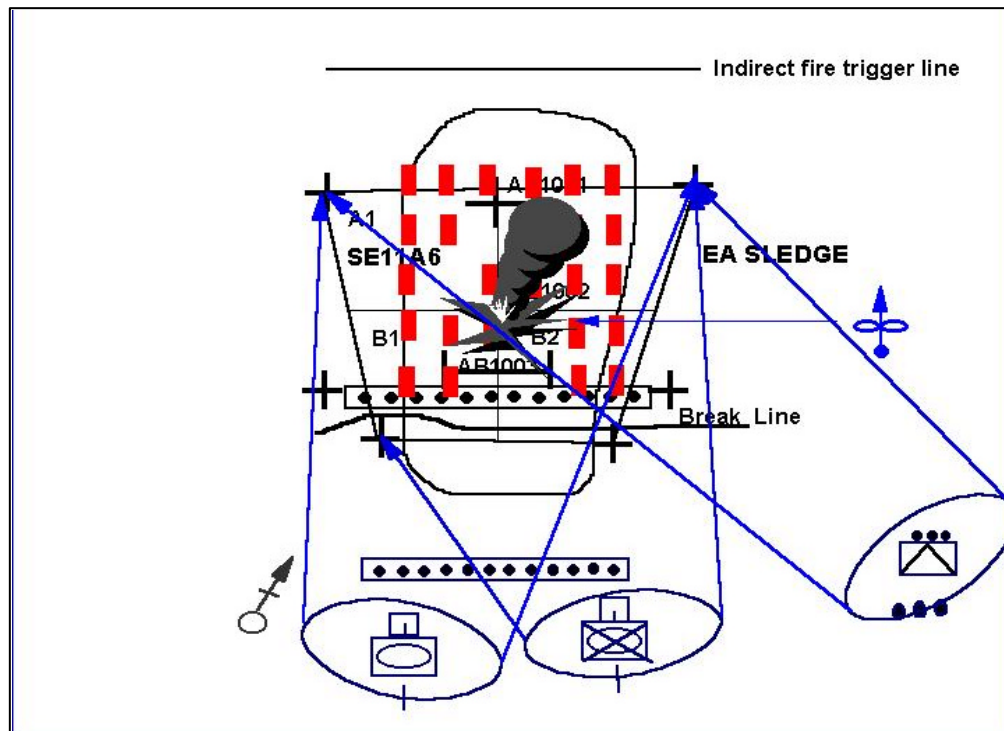


Figure 5. Task Force EA

In figure 6, we see a common fire plan integrating aviation and artillery in the engagement. The fire plan depicts the integration of aviation and indirect fires into the combined arms engagement area. There is no plan for electronic attack (non lethal fires) depicted in the schedule of fires.

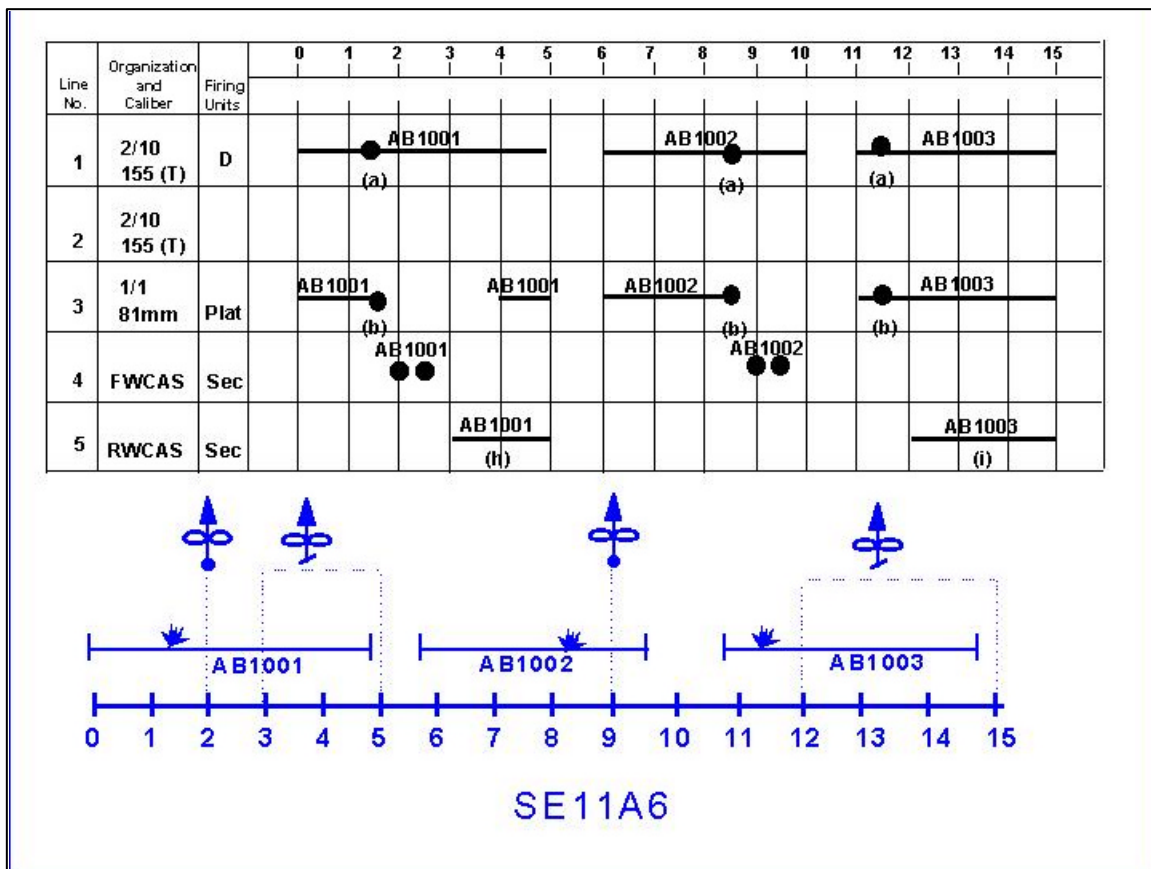


Figure 6. Scheduling Worksheet

In the second example, there is an enhancement of the combined arms process made possible due to increased staffing and integrated training provided by the TTECG. Elements of Radio Battalion, a UAV, and counter battery radar are integrated as components of the combined arms engagement. The Radio Battalion detachment supports the engagement with electronic protect (passive) and coordinated electronic attack (active) electronic warfare measures. The UAV provides real time video, communication relay, and Battle Damage Assessment (BDA) directly to the MAGTF and the task force. Counter battery radar supports the commander's concept for locating enemy indirect fire assets and delivering counter-fire.

Radio Battalion Enhancements

Prior to enemy forces beginning their attack, Radio Battalion direction finding and collection teams are integrated with visual reconnaissance methods to provide the commanders with continuous initial assessments of the enemy. Radio Battalion also attempts to clarify the enemy situation for the MAGTF by focusing on Priority Intelligence Requirements (PIRs) and the location of high value targets and high payoff targets. If tasked appropriately, Radio Battalion is capable of locating and providing indication and warning of possible Air Defense Artillery (ADA), Command and Control (C&C), or artillery activity. Based on the initial information from collection teams and Direction Finding (DF) assets, the MAGTF can reposition UAVs or Arial Reconnaissance to confirm, deny or enhance the accuracy of the collection and DF reports.

Actual portrayal of the enemy nets is currently a limitation of the TTECG due to the small staff. Depiction of enemy nets is a portion of the enemy scenario that is easy to present given additional personnel. Employment of command and control nets, when added to the detailed enemy situation, is an effective method of injecting the "will" of the enemy into the live-fire training scenario for commanders and staffs, while maintaining the required emphasis on live-fire combined arms integration.

During the attack and execution of the combined arms engagement area, selected Radio Battalion assets are tasked to collect and report secondary or tertiary Battle Damage Assessments for the commander. The detailed enemy situation constructed by TTECG is provided to exercise this capability and more importantly, to practice precise dissemination of combat reports to update the enemy situation throughout the MAGTF in a timely and accurate manner.

The electronic protect capabilities of Radio Battalion are also exercised to prevent the unintended disclosure of tactical information over unencrypted doctrinal nets such as Tactical Air Party Control (TACP) local. During recent FINEXs, Forward Air Controllers (FACs) have passed friendly information such as artillery battery grid positions, grid positions for company command elements and the disposition of friendly units in the task force Engagement Area over TACP local communication nets.¹² In the majority of the incidents, TTECG Marines identified disclosure of the information instead of Radio Battalion Marines due to the uncertain tasking and disjointed integration of RADBN detachments.

Additionally, the popularity and use of non-doctrinal Motorola style hand-held radios and cellular phones at CAX is another threat that needs to be monitored and thoroughly debriefed. During planning, intelligence Marines should brief operational security issues affiliated with the use of the radios and cellular phones, and monitor radio traffic during training to prevent disclosure of tactical information useful to the enemy. The training of the RADBN Marines and the education of MAGTF officers about communications security (COMSEC) issues during training and interaction with TTECG would improve the operational security posture of the MAGTF. Increased staffing by TTECG will allow improvements in instruction of techniques and procedures for monitoring and immediately identifying and correcting security violations that occur through the inadvertent and careless disclosure of combat information.

To train safely, Marines are required to communicate clearly and effectively over long distances in the desert. Increased training in EP

¹² Author, Personal notes. March 2000.

techniques and procedures at the tactical level will ensure that the information passed during training will not assist the enemy during time of war. Integration of RADBN assets enhances the value of CAX for RADBN and the Marines of the task force through protection of information, operational security and education of the commanders to this self generated threat.

Enhanced Electronic Attack (EA)

EA targets enemy nets that are most likely to disrupt the tactical capability and tempo of the enemy: command and control, conduct of fire, or reconnaissance nets. In the combined arms depiction, the trigger for engaging with EA is an Electronic Attack Target Area of Interest or a trigger line, identified during the Intelligence Preparation of the Battlefield (IPB) process. The EA trigger identifies, for the commander, the point where the initial engagement with EA would be most effective in support of the combined arms engagement. The EA trigger locates the area where the probability of effective disruption of the electromagnetic spectrum is highest, relative to the position of the EA team, the terrain and the most likely location of the enemy transmitters.

The role of electronic attack is expanded in the proposed combined arms scenario through integration and employment as a combined arms asset, not as a force multiplier. Observations during FINEX during the period August 98-June 00 by the TTECG staff noted that positioning and employing EA assets in the defense was not fully integrated for several reasons. First, many commanders had no experience requesting or integrating EW assets into tactical plans. Second, commanders were uncertain of the capabilities and limitations of the systems. Last, integration of the EA asset often depended on the knowledge of the

detachment OIC and the degree of trust the commander had in him.¹³

Electronic Attack is planned and integrated into the Combined Arms Engagement Area in a fashion consistent with the integration of other supporting assets. The Radio Battalion detachment is provided a task and purpose by the commander during course of action development. After being physically sited in the best tactical location to support the EA, RADBN Marines are included in combined arms, communications, and counterattack rehearsals. RADBN Marines are allocated task force assets required to successfully execute their task. For example, they will receive a percentage of blade hours and combat engineer support to ensure their position is survivable.

Additional TTECG intel personnel can address employment trends during training blocks one, two, and three. Currently, TTECG requires volunteers and Reserve Marines to augment TTECG FINEX staffing to provide integrated intelligence training. Increasing staffing will allow TTECG intelligence Marines to work closely with commanders, staff officers and RADBN Marines to educate them on employment considerations and improved integration in the combined arms process during CAX. Interaction allows the education process inherent at CAX to fully mature.

Understanding practical employment and integration requirements, instead of considering independent employment options, is what the CAX initially explored during the nineteen eighties. It is the fundamental benefit of the CAX. The capabilities provided by well-planned integration of intelligence assets must be fully explored at CAX to continue the evolution begun by Colonel Turley in 1979. Training the

¹³Author, Personal notes. March 2000.

MAGTF in the art of combined arms in a live-fire environment must include a comprehensive and aggressive approach for combining intelligence personnel and capabilities with aviation, infantry, artillery and maneuver.

Unmanned Aerial Vehicle Integration

The benefit of integrating the UAV into the EA results in confirmation of enemy actions, more precise combined arms against specific high value targets, and more accurate BDA for the commander. Integration of the UAV has the benefit of providing the MAGTF a real time, often redundant, source of information and confirmation of combat information. The UAV can also make up for the effects of terrain that limit observation by reconnaissance teams and minimize coverage by ground reconnaissance teams during conditions of decreased visibility.

As part of the integrated security posture of the Task Force, UAVs are tasked to provide initial warning to the Task Force of enemy forces moving towards the security area. The Task Force Operations Officer, Intelligence Officer, UAV Det OIC, and the RADBN OIC work together to adjust the coverage of the UAV based on national assets (if requested) results of IPB, and initial collection of the Task Force. As part of this process, TTECG Intelligence representatives guide Marines through the integration process, and if required, remind them of techniques and procedures that could assist in meeting the commander's intent. As the Engagement Area is being prepared, a UAV is positioned to augment screening elements and assist with gaining and maintaining observation of the enemy force. As the enemy force attacks into the engagement area, the UAV integration into the combined arms effort is based on the availability of fixed wing aviation. If fixed wing CAS is not on station, the MAGTF commander may direct that the UAV be routed into an ACA to provide video feed of enemy actions.

As with Radio Battalion, the UAV provides additional educational capability that is often discounted by the MAGTF during FINEX. Employing the UAV to observe the Task Force positions and assess the disposition of the MAGTF provides four additional opportunities: (1) Increased training for RADBN by collecting signals traffic emanating from Samaran nets reporting information gathered from the UAV flight to forward units, (2) Increased portrayal of the enemy commander's intentions through radio traffic generated during and after the UAV flight by TTECG Intelligence Marines, (3) Increased exercising of the intelligence cycle with collected information from RADBN to the MAGTF, and forcing the MAGTF Commander and his staff to adjust the allocation of combined arms resources (Unlike many other training scenarios, CAX is unique because decisions are made with the understanding that plans must be executed live-fire. That tends to drive home the difficulty in completing the final segment of the intelligence cycle, Utilization.), and (4) Providing information to enhance techniques and procedures for MAGTF force protection and survivability. Employment of the UAV in this role is a tremendous educational tool for Marines to re-emphasize the importance of executing continuous camouflage and basic force protection measures. In a recent CAX, TTECG coordinated USMC UAV assets representing enemy UAV capability. During the CAX, the UAV made a pass over a set of tents. During the pass, the UAV was able to determine from a sign that had been knocked over, that the tents were "Xth MARINES COC".¹⁴ The combined arms training was strengthened by exposing a weakness to the MAGTF depicting how they appeared to a targeting asset that is available on the open market.

¹⁴ Author, Personal notes. March 2000.

Counter Battery Radar Benefits

Counter battery radar is another system that is more completely integrated into the combined arms process in the enhanced scenario. CBR provides the MAGTF a tremendous capability to rapidly respond to enemy mortar and artillery systems. TTECG strives to provide sound radar training to the Marines in the CBR field, but as with other systems, TTECG is restricted by limited staffing. During CAX, the TTECG has employed the Counter Battery Radar OIC as a "Trusted Agent" to make up for the shortfall in TTECG staffing. The OIC has been a conduit to relay enemy mortars and artillery firing data from TTECG to the Marines manning the radar. While this has generated generally effective training for the Marines, it deprives the OIC of a training opportunity and prevents him from advising the commander on radar employment and positioning during the FINEX.

A new computer training system may provide additional methods for integrating the CBR system in the CAX. The Collective Training System (CTS) allows the programming of a specific enemy firing system - originating grid, tracking of the number of projectiles, and generating the impact grid - to be set in the computer system and triggered during the exercise. The CTS provides actual input to all elements during execution of the counter fire mission. Exposure to this system during blocks one and two during the enhanced intelligence training will demonstrate to commanders, FSCs, and communicators the capability the Q-36 RADAR possesses. Training will also re-emphasize the importance of radar being fully integrated into the combined arms process, positioned and prepared to enhance the capabilities of the MAGTF combined arms effort.

In the CAX, there are times when enemy mortars are positioned so they are covered by terrain and therefore pose a problem for artillery

engaging the mortars. Communication and integration of assets allows the MAGTF to quickly determine from multiple reports that enemy mortars are firing from positions that are protected by terrain from the effects of artillery. Reports are generated from multiple sources: CBR whose radar tracks the mortar fire, Radio Battalion who identifies the enemy COF net and requests to conduct EA, the UAV that is able to observe the position of the mortars in defilade, and the Marines in the infantry task force that are receiving the indirect fire. Integration of collection assets and the ability to quickly assess the situation allows the MAGTF or the Task Force commander to identify the precise location of the enemy mortars with redundant assets, and integrate combined arms assets to destroy or neutralize the enemy mortars. (RADBN, Task Force mortars, and attack helicopters) Significant in this example is not the enemy system engaged, but the ability to exercise a complicated battle drill completely understood and executed during building block training, that integrates all aspects of the MAGTF combined arms capability rapidly and precisely to address an enemy capability and prevent casualties on the Marines in the Task Force.

Conclusion

The current role of the Intelligence BOS at CAX is limited. It does not meet the training standard attained with the maneuver and fires operating systems. Increasing the role of the intelligence BOS in combined arms training requires updating the task organization of the TTECG, and teaching and executing more complete MAGTF combined arms training. Making intelligence a more integral component at CAX can be done without a significant impact on the CAX costs or training. As this change occurs, the depth of training for all Marines at CAX will be enhanced, not degraded, by increasing the training received by the intelligence community.

Improving the role of intelligence has been a minor part of the CAX evolution since 1980. It is time for that to change. It took 40 years following the development of Marine Corps combined arms doctrine to dedicate time and assets to peacetime combined arms training. The Marine Corps cannot afford to wait another 40 years for the CAX to evolve and eventually include a training program that integrates the advances in tactical intelligence technology and capability into the combined arms close fight.

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310	TACTICAL TRNG AND EXERCISE CONTROL GROUP					
310A	DIRECTOR	COL	9906	M O	1	
P						
312	DEPUTY DIRECTOR	LTCOL	0302	M O	1	
P						
312A	HEAD, TEC REP	LTCOL	9910	R O A		1
A P						
312B	ASST HEAD, TEC REP	LTCOL	9910	R O A		1
A P						
312C	BATTALION REP	LTCOL	0302	R O A		2
A P						
312D	HD, TTECG REP	COL	9906	R O B		1
1 P						
312E	TTECG LNO	LTCOL	0302	R O B		1
2 P						
312F	MEF REP	LTCOL	9910	R O B		1
2 P						
312G	REGT REP	LTCOL	9910	R O B		1
2 P						
313	ADMIN/SUPPORT OFFICER	CAPT	0302	M O	1	
P						
313A	LOGISTICS OFFICER	CAPT	0402	M O	1	
U						
313B	LOGISTICS OFFICER	MAJ	0402	R O A		1
A P						
314	LOGISTICS CHIEF	MGYSGT	0369	M E	1	
P						
314A	LOGISTICS CHIEF	GYSGT	0491	R E A		
1	A P					
314B	LOG CHIEF	GYSGT	0491	R E B		
1	2 P					
315	LOG SPECIALIST	CPL	0431	M E	1	
M						
317	DRIVER	LCPL	3531	M E	1	
M						

TABLE OF MANPOWER REQUIREMENTS

AS OF: 00/10

T/O: 7711 MCAGCC, 29 PALMS

[illegible]

328A	RADIOR SUPERVISOR	SSGT	0629	R E A	
1	A P				
329	ELECTRONIC WARFARE REP	CAPT	0202	M O	1
P					
			0206	N	
330	ELEC WARFARE CHIEF	SSGT	2621	M E	1
P					
330A	ELEC WARFARE CHIEF	SSGT	2621	R E A	
1	A P				
331	COMBAT ENGINEER REP	CAPT	1302	M O	1
P	*A				
331A	COMBAT ENGINEER	SSGT	1371	M E	1
U					
331B	COMBAT ENGINEER REP	CAPT	1302	R O A	1
A P					
331C	ASST COMBAT ENGINEER REP	CAPT	1302	R O A	1
A P					
331D	ENGINEER REP	CAPT	1302	R O D	1
2 P					
332	INFANTRY REP	MAJ	0302	M O	2
P					
332A	INFANTRY WEAPONS OFF	CWO3	0306	M O	1
P					
332B	MANUEVER REP	MAJ	0302	R O A	1
A P					
332C	ASST MANUEVER REP	CAPT	0302	R O A	2
A P					
332D	MANUEVER REP	MAJ	0302	R O B	1
1 P					
332E	ASST MANUEVER REP	CAPT	0302	R O B	1
2 P					
332F	ASST MANUEVER REP	GYSGT	0369	R E A	
2	A P				
333	ASST INFANTRY REP	MAJ	0302	M O	1
P					

TABLE OF MANPOWER REQUIREMENTS

AS OF: 00/10

T/O CHECKLIST

T/E: 7711

[illegible]

346A	FIELD RADIO OPR		LCPL	0621	M E X	
9	M	*				
346B	FIELD RADIO OPR		PVT	0621	M E X	
23	M	*				
			SECTION TOTALS			
			MARINE			19 44 1
2						
			RESERVES			42
14						